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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|----------------------|---------------------|------------------|
| 10/594,614 | 09/28/2006 | Nobuo Asahara | BAN-004 | 5231 |
| 20374 7590 10/22/2008 KUBOVCIK & KUBOVCIK SUITE 1105 1215 SOUTH CLARK STREET ARLINGTON, VA 22202 | | | | |
| EXAMINER TORRES VELAZQUEZ, NORCA LIZ | | | | |
| ART UNIT | | PAPER NUMBER | | |
| 1794 | | | | |
| MAIL DATE | | DELIVERY MODE | | |
| 10/22/2008 | | PAPER | | |

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/594,614

Applicant(s)

ASAHARA ET AL.

Examiner

Norca L. Torres-Velazquez

Art Unit

1794

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 July 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) 20-31 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 September 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/5508)
Paper No(s)/Mail Date 060807.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____.
- 5) ☐ Notice of Individual Patent Application
- 6) ☒ Other: IDS 07/11/2007

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of claims 1-19 in the reply filed on 07/16/2008 is acknowledged.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 4, 7, 17-19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
4. Claim 4 recites "wherein in each of said reinforcing fiber substrates is fixed in its fabric style." It is not clear what is meant by 'fixed in its fabric style'.
5. With regards to claims 7 and 17-19, it is noted that the acronym "FRP" could identify a several different materials. It is requested that Applicants use the full name of the material being claimed.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1-8 and 11-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over NISHIMURA et al. (US 4,786,541) in view of FAIRBANKS (US 6,106,646).

NISHIMURA et al. relates to a reinforcing fiber material used in fiber reinforced plastics (FRP) that are useful for skin materials of an airplane wing or H- or I-beams. It discloses a fiber material for reinforcing plastics prepared by laminating at least one first fiber substrate in which the reinforcing fibers extend in two directions. (Abstract; Refer to Col. 8, lines 63-68) The reference discloses an embodiment in which a reinforcing fiber material is constructed by laminating a plurality of substrates and integrating these by stitch yarns. The reference teaches the use of unidirectional prepreps that are prepared by gathering by impregnating longitudinally arranged reinforcing fibers with an uncured thermosetting resin. The reference also teaches the use of unidirectional woven fabrics. (Refer to Col. 4, lines 22-48) The woven fabrics can have a plain weave, or other weaves such as satin and twill. (Refer to Col. 5, lines 10-12) The reference teaches the use of multifilament yarns such as carbon fibers, and polyaramide fiber, among others, as the reinforcing fibers. (Col. 5, lines 36-39) The reference teaches the use of resin such as unsaturated polyester resin, epoxy resin, phenol resin and polyimide resins for the impregnation of the reinforcing fibers material. With regards to the resin of the material, it is noted that the reference teaches that the content based on the reinforcing fiber material is preferably 35 to 60% by volume. Further, discloses that the resin content will vary depending on the geometrical space confined by the fiber substrates and the reinforcing fibers. (Refer to Col. 7, lines 46-55 and Col. 8, lines 3-26) The reference further teaches that a needle having the least possible cross-sectional area, a sharp point and a smooth surface is preferred. (Col. 8, lines 50-55) The reference further teaches that with respect to the thickness of the stitch yarns, it is preferred that the cross-sectional area is 0.01 to 0.025 mm². [*equivalent to a diameter of 0.112-*

0.564] (Refer to Col. 6, lines 63-65) It is the Examiner's interpretation that the holes holding the stitch yarns will have at least a diameter between 0.112-0.564 mm.

While NISHIMURA et al. teaches needling the layers and this process could be interpreted to provide the claimed holes, the Examiner provides herein the reference of FAIRBANKS to show that the presence of holes in the material of NISHIMURA et al. would be obvious.

FAIRBANKS discloses a method for joining a plurality of layers of nonfully cured composite material, including layers comprising a fiber reinforced polymeric matrix. The reference teaches a plurality of spaced apart holes generated through the stacked layers by penetrating a thin, pointed tool into and through a preform using ultrasonic energy applied to the tool. The hole wall is smooth and fiber reinforcement is substantially undisturbed away from the hole wall. (Refer to Abstract; Col. 2, lines 1-12; col. 3 lines 8-20)

Since both references are directed to fiber reinforced plastics, the purpose disclosed by FAIRBANKS would have been recognized in the pertinent art of NISHIMURA et al. It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the material of NISHIMURA et al. and provide it with through holes formed by the method disclosed by FAIRBANKS with the motivation of producing holes that have smooth hole walls in which the fiber reinforcement is substantially undisturbed that minimizes the effect on the fiber reinforcement in the matrix allowing for stitching in the Z direction without weakening the "Z" axis stitching as disclosed by FAIRBANKS. (Refer to Col. 1, lines 37-55; and Col. 2, lines 1-12) With regards to the claimed stepped portion with a different stacking number of reinforcing fiber substrates, it would have been obvious to one having

ordinary skill in the art at the time the invention was made to provide additional reinforcement to certain areas of a preform depending on the strength requirements and design of a of a final product, since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art. *St. Regis Paper Co. v. Bemis Co.*, 193 USPQ 8.

8. Claims 9-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over NISHIMURA et al. (US 4,786,541) and FAIRBANKS (US 6,106,646) as applied above, and further in view of WADAHARA et al. (US 2004/0170554 A1).

NISHIMURA et al. fails to disclose the form of the resin.

WADAHARA et al. also relates to fiber reinforced substrates and preform comprising the substrate. [0001] The reference teaches the use of resins in the form of fabric, particles, discontinuous pieces. [0170]

Therefore, it would have been obvious to one having ordinary skill in the art of fiber reinforced plastics to use resin materials in the form of particle or fiber fabric motivated by the desire of providing homogeneity, mechanical property improving effect and inhibition of water absorption to the composite as taught by WADAHARA et al. [00170]

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Norca L. Torres-Velazquez whose telephone number is 571-272-1484. The examiner can normally be reached on Monday-Thursday 8:00-5:00 pm and alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Milton Cano can be reached on 571-272-1398. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Norca L. Torres-Velazquez/
Primary Examiner, Art Unit 1794

October 17, 2008